運輸交通基盤整備における地域開発的視点:インド亜大陸東部地域の事例研究

Regional Perspectives for Development of Transport Infrastructures : A Case Study in Indian Subcontinent

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Abstract :

Development projects, such as construction of Paksey and Rupsa Bridges and rehabilitation of Mongla Port, are ongoing accelerating completion of the North-West transport corridor in Bangladesh. While these projects are locally situated and developed mainly for the domestic economies, when completed the land transport services offered through the corridor are expected to yield substantial benefits for the Region as defined Eastern States of India, Bangladesh, Nepal and Bhutan. This paper reports on the possible approach for planning of transport infrastructures with the regional perspectives, with particular emphasis on the transit cargo for Nepal which is landlocked by two giant countries in Asia, India and China.

After completion of Paksey Bridge over the Ganges River and Rupsa Bridge over the Pusur River on the North-West strategic transport corridor in Bangladesh, the shortest route option is expected to be realized between Nepal and Mongla Port. Appropriate trilateral agreements if established between Bangladesh and its neighbors, India and Nepal, with a view to avoiding time-consuming unloading/reloading at the border for the transit cargo, will spur Mongla Port to participate in the inter-port competitions in the Region, and it will result in yielding benefits from increased trade opportunities between Bangladesh and Nepal and beyond. The similar analogy may be applied to the case of Bhutan.

Development of associated transport infrastructures will enhance economic activities in the Region through extensive utilization of potential resources. Furthermore, it is expected to enhance the inter-dependence of socio-economic

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activities among the cross-border communities, thus facilitating the regional stability and security.

1. Introduction

The Government of Bangladesh (GOB) has exerted its efforts to develop national transport network comprising five strategic transport corridors, as shown in Fig. 1, in order to increase economic growth through improvement of transport efficiency by mobilizing domestic as well as external resources available to the maximum extent, such as the assistance of the World Bank and the Asian Development Bank, and Japan's official development assistance (ODA) as well.

These were initiated by the improvement of Chittagong Port in early 1960s, followed by railways and highways between Dhaka and Chittagong, meter-gauge railways in the eastern side of the Jamuna River, a national highway link between Khulna and Mongla, and construction of Jamuna Bridge. The proposed Paksey and Rupsa Bridges are the last missing links among these corridors. See Fig.2. Along with such development projects, the GOB puts emphasis on exploring trade potentials with landlocked countries, Nepal and Bhutan, and the eastern states of the India (hereinafter referred to as "the Region") by taking all the opportunities

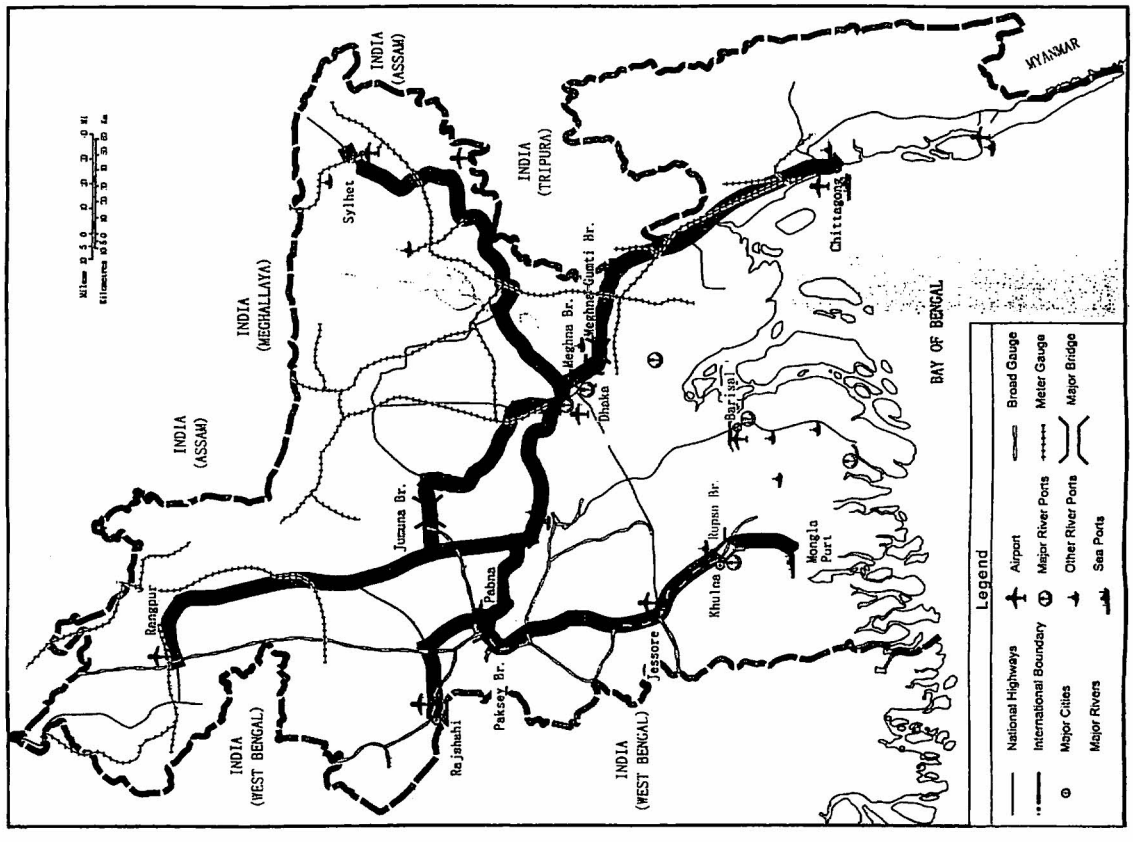


Fig. 1 Strategic Transport Corridor in Bangladesh

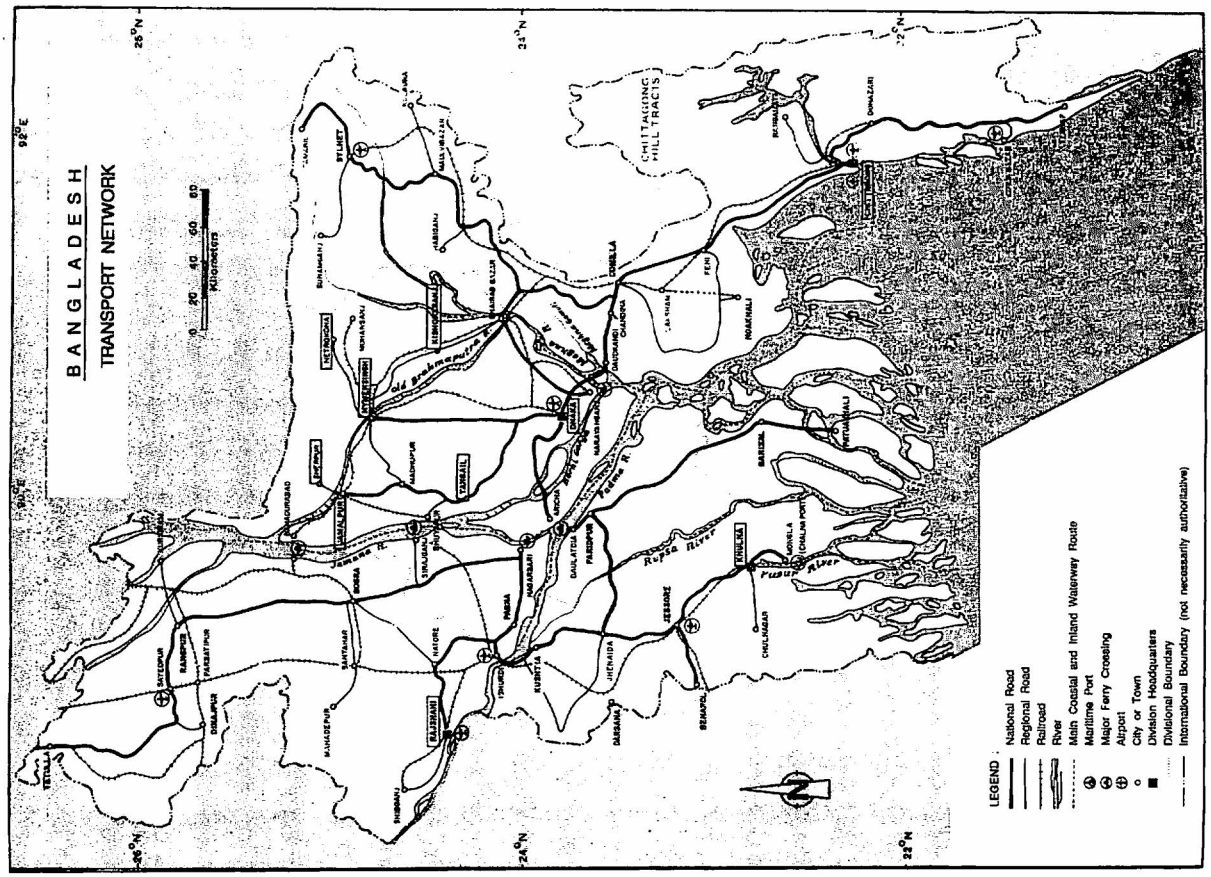


Fig. 2 Transport Network in Bangladesh

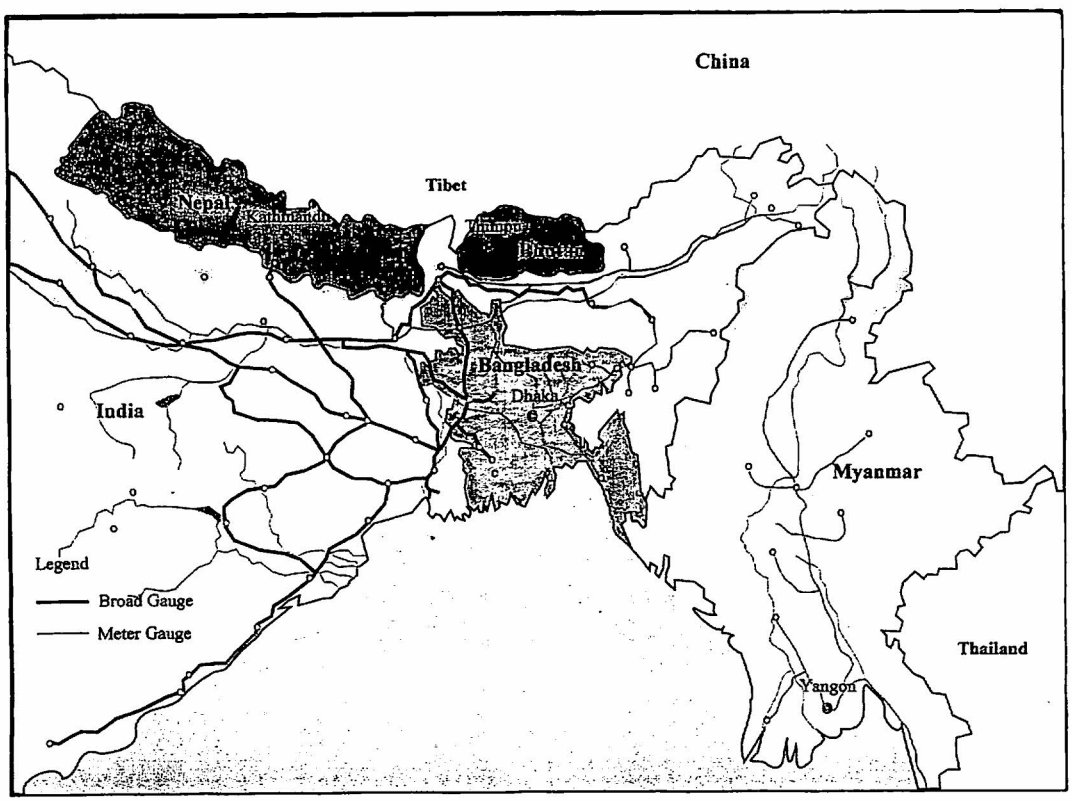


Fig. 3 Map of the Region with Major Railway Routes

available to develop international infrastructures such as Asian Highways and Eurasian Railways. The map of the Region and the major railway routes referred to in this paper are shown in Fig. 3.

This paper aims to examine a possible approach to planning of transport infrastructure with the regional perspectives. The major transport systems in the Region were studied with particular emphasis on the transit cargo traffic for landlocked Nepal and three regional gateway ports, Chittagong and Mongla Ports in Bangladesh and Calcutta Port in India and evaluation was attempted for the development scenario of the Region in terms of growth of the Nepalese transit cargo through the provision of transport infrastructures in the North-West corridor in Bangladesh.

2. Protocol Routes and Institutions

2.1 Bangladesh-India

Bangladesh which is located at the center of the Region, is encompassed by Indian borders except the southeastern border with Myanmar. Cross border traffics between Bangladesh and the regional three other countries fall into three categories : (a) bilateral traffics between Bangladesh and India, (b) Indian transit traffics from one part of India to another traversing the Bangladesh territory, and (c) transit traffics to and from landlocked Nepal and Bhutan crossing the Indian territory, while the traffic destined to and originated from Bhutan is insignificant.

Between Bangladesh and India, there are three protocol railway routes, four inland waterway routes and twenty-five routes on highways. All the railway routes are facing to West Bengal, namely, Darsana (Broad gauge), Rohanpur (Broad gauge) and Biral (Meter gauge) as the cross border terminal, respectively. A fourth rail crossing, at Shahbajpur in the northeast Bangladesh is yet to be taken up for bilateral negotiations between Bangladesh and India.

2.2 Bangladesh-India-Nepal

Nepal, the landlocked country, has long relied upon Calcutta and Haldia Ports based on a transit agreement with India in the conduct of her foreign trades. However, efforts for exploring alternative transit routes through Bangladesh had been made for Nepalese trades and a protocol route was for the first time established in 1978 for rail transport from Bangladesh via Biral that is on the border with India. This was the initial arrangement for the Nepalese transit traffic using railways. Further efforts have been continued to explore other alternative routes and currently

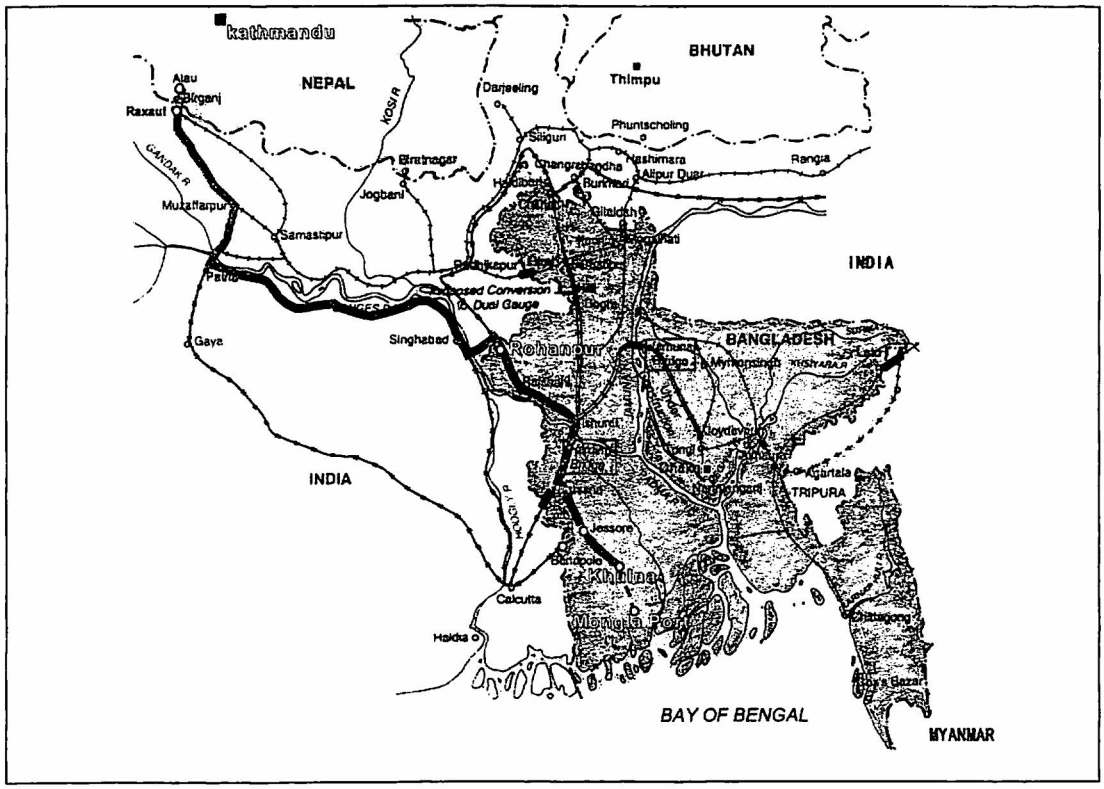


Fig. 4 Rail Transport Route for Nepal Transit Cargo

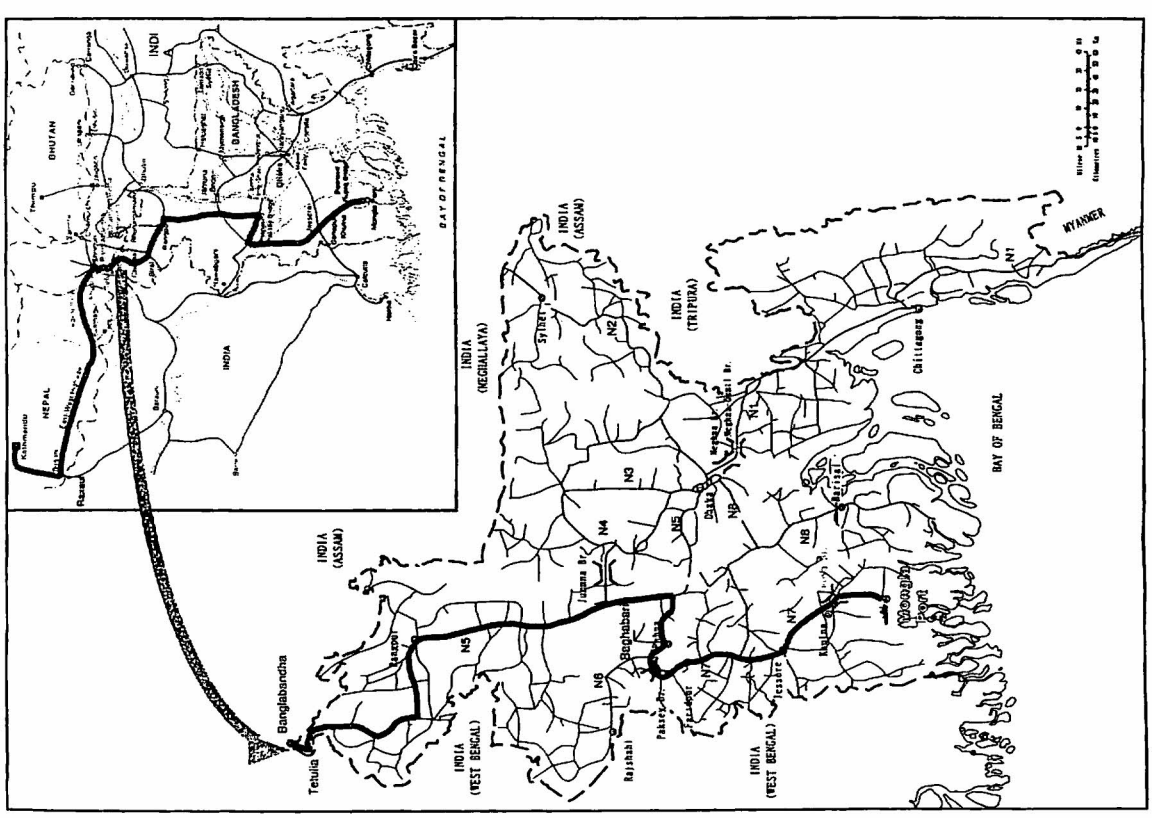


Fig. 5 Road Transport Route for Nepal Transit Cargo

three routes exist in Bangladesh as shown in Figs. 4 through 6, with a view to avoiding port oriented constraints, such as shallow approaches, port congestion, operational delays and poor labor productivity. The total Nepalese transit cargo carried over three transport modes in Bangladesh, railways, highways and inland waterways, was at the range of 70,000 tons in 1998.

2.3 India-Nepal

Currently Calcutta Port is the most important base for Nepalese import/export cargoes ; the annual total of the Nepalese cargoes handled at Calcutta and Haldia Ports has reached about a half million tons in late 1990s. Among the two ports, Calcutta Port has particular port facilities dedicated to the Nepalese cargo, and only 30 thousand tons of such cargoes were handled at Haldia in '97 / '98. The Nepalese cargo mainly consist of fertilizer, edible oil, and general daily commodities.

The Nepalese cargoes handled at Calcutta / Haldia Ports are transported both by trucks and railways. Calcutta Port provides the Nepalese Government with beneficial treatments such as exclusive-use of transit sheds, prolonged free time for storage at the transit sheds, and some specific facilities at the Indian-Nepalese boarder areas. While 95 % of container cargoes are transported by truck, in India, unlike in Bangladesh, a large portion of containers is distributed in a form of container box, avoiding unnecessary stuffing / destuffing operations at the port area in India. Approximately 50 % of dry bulk cargo is transported by railways in case of Haldia Port, while a relatively small portion of the cargoes is transported by railways in case of Calcutta Port.

2.4 Calcutta / Haldia Ports vs Chittagon / Mongla Ports

The hauling distance by railways between Calcutta / Haldia Ports and Nepal is nearly same as the one between Mongla Port and Nepal, both using broad gauge lines. In case of Chittagon Port, the railway route is about 150 km longer than two other ports and transshipment from meter gauge lines to broad gauge lines is required.

As for the road transport, the hauling distance between Mongla Port and Nepal becomes the shortest if the East-West Highway in Nepal is utilized. See Fig. 7. However, at this moment there exist two ferry-crossings in Bangladesh, Paksey and Rupsa, adversely affecting Nepalese transit cargoes. Currently construction of Paksey and Rupsa Bridges which will replace the ferry crossings are now at a

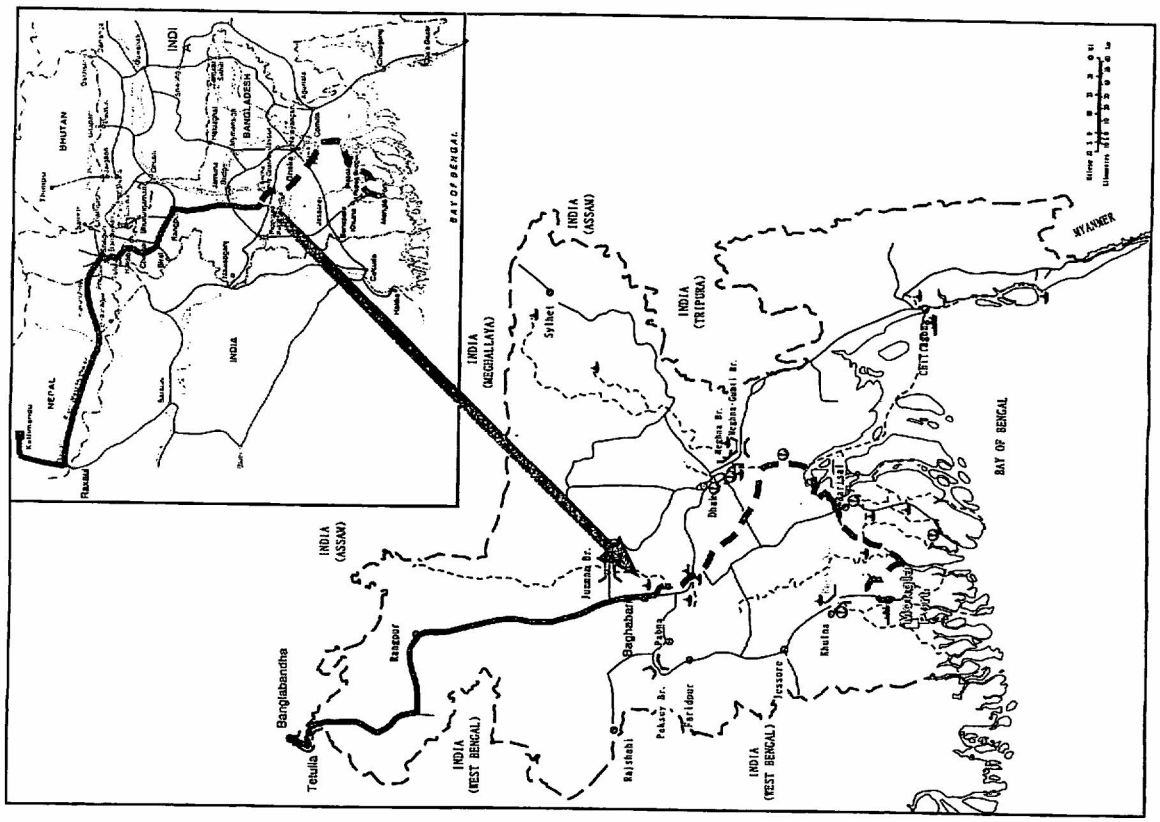


Fig. 6 Inland Waterway plus Road Transport Rout for Nepal Transit Cargo

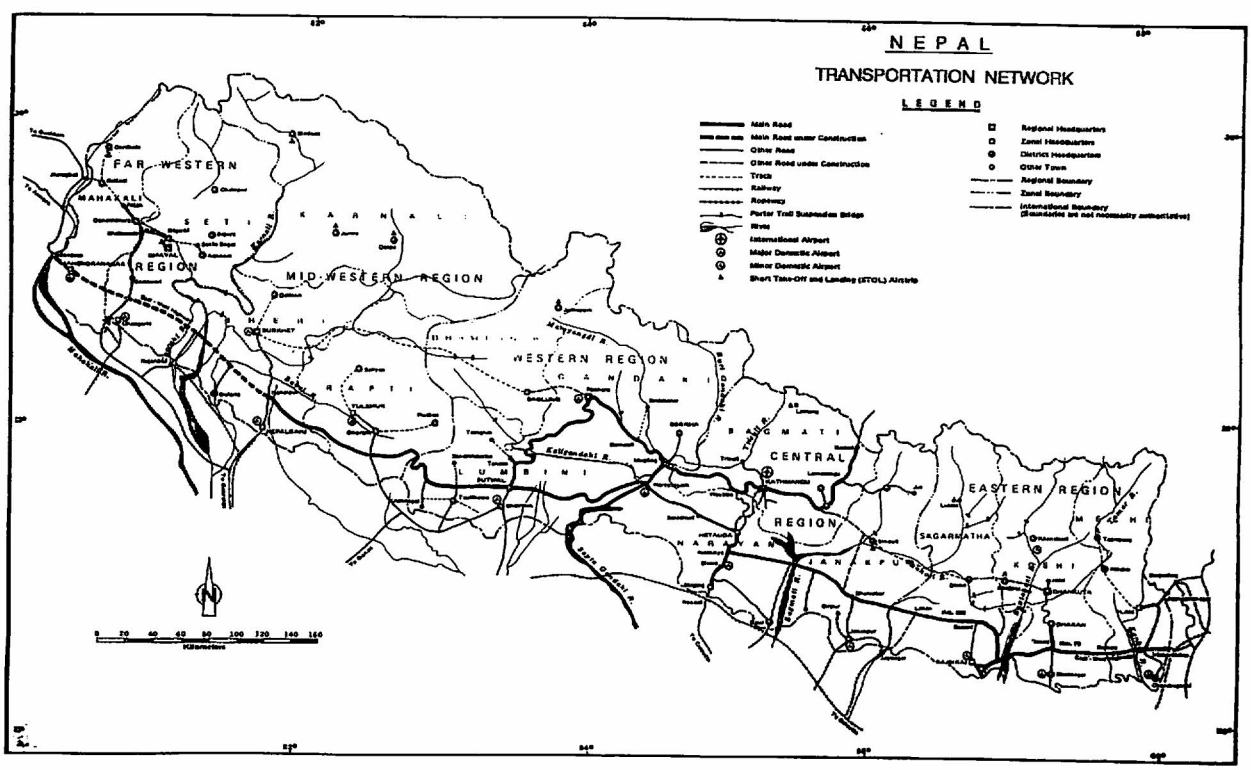


Fig. 7 Transport Network in Nepal

pre-contract negotiation stage, with Japan's bilateral economic cooperation.

For the customs formalities, Nepalese transit cargoes are sealed at the origin with the seal being checked twice by the Bangladesh sides (i.e., on entering and leaving the Bangladesh territory). The custom formalities in India are the same in principle, however, dedicated facilities and experienced agents at Calcutta / Haldia Ports make container handling more efficient than at Mongla Port at this moment. Port operations at Chittagong / Mongla Ports need to be substantially improved for efficiency and effectiveness to be competitive with Indian ports, Calcutta / Haldia.

3. Socio-economic Framework

All of the four countries' national Five-year Development Plans in the Region, have set targets at high economic growths as shown in Table 1. Salient features of these development plans are that agriculture and allied sectors occupy more than one third of Gross Domestic Product (GDP) and the portion of industrial sector remains very low except India. Accordingly, high priority is commonly given in these development plans to the improvement of agricultural productivity and high growth of industrial sector to achieve the targeted growths. Fig. 8 shows the population of Bangladesh and her neighbors, Nepal, Bhutan and Northeast India. The GOB has set her strategy to improve trunk transport corridors for transport cost savings and to provide transport services for transit cargoes to and from landlocked countries, Nepal and Bhutan, with expectations for substantial increase of traffic

Fig. 8(A) Population and Density in the Region(in 2000)

in million

	Bangladesh	Nepal	Bhutan	NE India
Population in 2000	132.5	23.5	0.7	36.3
Density(persons/sq.kr)	920	206	41	112

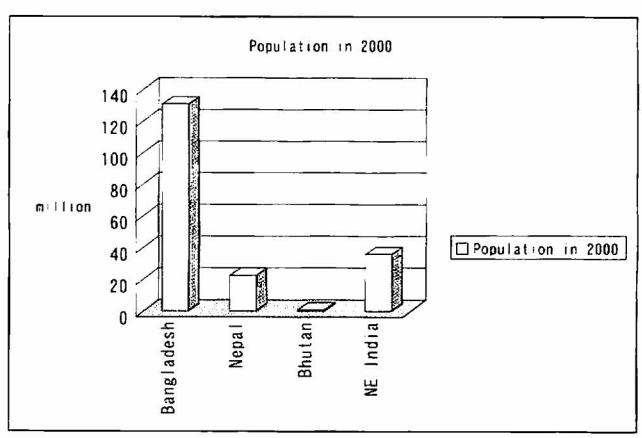
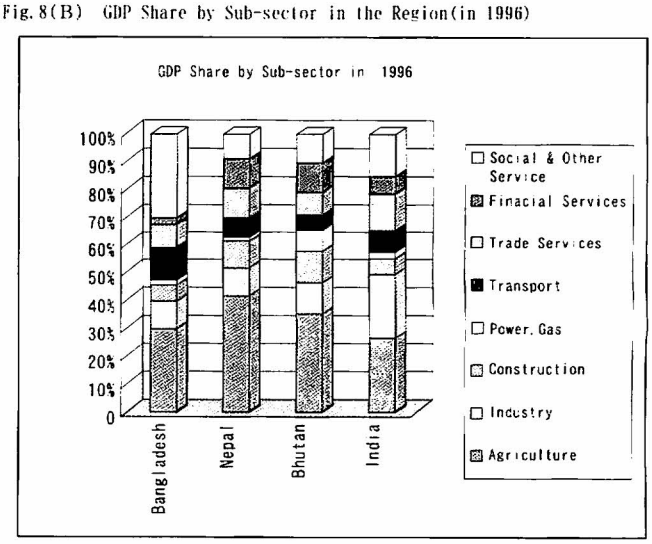


Fig. 8(B) GDP Share by Sub-sector in the Region(in 1996)



Banghdesh (Fith Five Year Plan 1996 / 97-2001 / 02, Planning Commission)

1. Populadon (million)

1996 / 97	123.80	
2001 / 02	132.50	(1.36 % per annum)
2009 / 10	147.10	(1.31 % per annum)
2019 / 20	166.50	(1.25 % per annum)

2. GDP (at constant 1996 / 97 price, million TK)

	1996/97 GDP	Share (%)	2001/2002	Annual Growth Rate (%)
Agriculture	418,306	29.8	508,933	4.0
Industry	129,765	9.3	263,919	15.3
Construction	82,346	5.9	115,495	7.0
Power, Gas	30,834	2.2	94,099	25.0
Transport	158,040	11.3	225,048	7.3
Housing Services	134,117	9.6	165,109	4.2
Public Administration	79,048	5.6	98,508	4.5
Health	19,184	1.4	27,541	7.5
Education	58,685	4.2	83,566	7.3
Trade Services	125,799	9.0	179,137	7.3
Banking, Insurance	28,084	2.0	37,583	6.0
Prof. & Misc. Services	138,026	9.8	194,565	7.1
Total (at factor cost)	1,402,235		1,993,504	7.3

Nepal (Approach to the Ninth Plan 1997 2002, National Planning Commission)

1. Population (million)

1995	21.46	(85 95 Annual Average 2.5 % per annum)
2000	23.50	(1.8 % per annum)
2012	29.06	(1.8 % per annum)

2. GDP (at constant 1996 / 97 prices, in Rs. IO million)

	1996 / 1997	GDP Share (%)	2001/2002	Annual Growth Rate (%)
Agriculture, Irrigation & Forestry	11,116	41.7	13,655	4.2
Industry (including Geology & Minin)	2,587	9.7	4,498	11.7
Electricity, Gas & Water	397	1.5	636	9.9
Construction	2,659	10.0	3,746	7.1
Trade, Hotel & Restaurant	2,998	11.2	4,206	7.0
Transport & Communications	1,802	6.8	2,722	8.6
Financd & Real Estate	2,687	10.1	3,681	6.5
Social Services	2,437	9.1	3,401	6.9
Total (at factor cost)	26,682		36,546	6.5

INDIA (Ninth Five Year Plan 1997-2002, Plnning Commission)

1. Population (million)

1996	934.22	
2001	1,012.39	(1.62 % per annum)
2006	1,094.13	(1.57 % per annum)
2011	1,178.89	(1.50 % per annum)

2. GDP : 2,740 billion Rs. at constant 1980 / 81 prices

	8FYP CoWth Rate (%)	9FYP Growth Rate (%)	(1995 / 96 (Quick Estirates) Share of GDP (%) 1996-97	2001-2002
Agriculture & Allied Secto	3.7	4.5	27.0	24.0
Mining & Quarrying	4.1	7.7	1.9	1.9
Manufacturing	9.5	9.7	20.3	23.0
Electricity, Gas & Water	7.6	10.6	2.6	3.1
Construction	4.4	5.7	5.7	5.4
Trade	10.0	7.1	13.7	13.8
Rail Transport	2.4	3.4	1.3	1.1
Other Transport	7.5	7.9	5.2	5.5
Communications	13.9	11.2	1.4	1.7
Financial Services	8.9	10.1	5.8	6.7
Public Adminintration	4.3	4.9	5.3	4.8
Other Services	5.3	5.5	9.7	9.1
Total	6.5	7.0	100.0	100.0

Bhutan (Eighth Five Year Plan 1997-2002, Ministry of Planning)

1. Population (million)

1997 / 1998	0.620	
2001 / 2002	0.690	(2.71 % per annum)
2004 / 2005	0.759	(2.93 % per annum)
2009 / 2010	0.838	(2.00 % per annum)
2014 / 2015	0.907	(1.59 % per annum)

2. GDP (at constant 1980 prices, in million Nu.)

	1997/98	GDP Share (%)	2001/2002	Annual Growth Rate (%)
Agriculture Sector	1,182.9	35.2	1,305.3	2.5
Agriculture	634.8	18.9	700.7	2.5
Livestock	263.3	7.8	296.4	3.0
Forestry & Logging	284.8	8.5	308.2	2.0
Mining & Quarrying	51.8	1.5	119.9	19.4
Manufacturing	327.8	9.7	540.5	12.0
Electricity & Gas	273.4	8.1	348.0	7.0
Construction	368.3	11.0	482.7	7.0
Transport & Communications	190.6	5.7	223.0	4.0
Trade, Hotel, etc.	273.6	8.1	400.6	10.0
Finance, Insurance & Real Estate	338.3	10.1	495.3	10.0
Government Services	355.4	10.6	448.6	6.0
Total (at factor cost)	3,362.1		4,363.9	6.7

Table 1 Summary of National Five Year Plans in the Region

demands through Chittagon and Mongla Ports.

4. Transit Cargoes to/from Landlocked Countries via Gateway Ports

4.1 Current Status

There are many landlocked countries all over the world. Each of them tries to establish efficient and stable international transport systems by seeking secure routes and gateways. In other words, such seaports and related surface routes are their lifelines connecting the country with the gateways which are essential for sustaining her economy, industries and people's daily lives. There are a few cases where seaports are provided with some port facilities dedicated to certain neighboring landlocked countries, such as Calcutta Port of India for Nepal and Tianjin Port of China for Mongolia. Karachi Port of Pakistan provides port services for Afghanistan but without dedicated facilities. Ports in Thailand and Vietnam have been developed mainly for their own economies but provide port services as the gateways for their neighbor, Laos.

Nowadays, most of seaports for international trades operate under the principle of market mechanism and are subject to severe commercial competition for financial viability with their neighboring ports, domestically as well as internationally. This situation is quite different from other transport infrastructures as roads and railways, while railways tend to compete with roads for their land transport services. This situation is considered to have originated from the inherent nature of port services. In order to handle the targeted volume of cargoes, ports have to be competitive in the market by being equipped with good port infrastructures, efficient cargo handling, excellent port services, low tariffs and other service oriented matters. This kind of competition among ports is especially fierce in transport to / from landlocked countries, because it involves international relations, national development policies, custom treatment, safety of navigation, security of goods and others. In the Region, Mongla Port, Calcutta Port, Chittagong Port are three major players for international transport services for Nepal and Bhutan.

4.2 Three Ports in the Region

Mongla Port is the smallest in terms of the port capacity among these three ports, while Calcutta Port and Chittagon Port play an important role in domestic as well as international trades for the eastern states of India and Bangladesh, respectively. Despite being located at the nearest to Nepal, Mongla Port has not

been utilized to handle Nepalese cargo or even Bangladesh's domestic cargo to any significant extent due to the lack of efficient land transportation systems and the port's poor performance. However, this situation may be drastically changed because of the construction of Paksey and Rupsa Bridges.

(1) Mongla Port

Mongla Port is situated at the east bank of Pussur River near the confluence of Pussur River and Mongla Nulla at a distance of 65 nautical miles from the estuary, more correctly from the fairway buoy situated in the Bay of Bengal. It handles approximately 2.8 million tons of cargo and 20 thousand TEUs of container cargo annually. It can accommodate vessels with the maximum draft of about 8 m. Almost all the imported cargoes are handled on the river, which means that cargoes are transferred from a mother vessel to barges and then distributed through well developed inland waterway systems. Little cargo is handled at the berths and transferred by land transportation to / from the port due to lack of an efficient land transport systems mainly caused by ferry crossings.

For the first time in its history, the port handled 41 thousand tons of Nepalese cargo in 1997 / 1998. Construction of the Rupsa Bridge at Khulna is expected to

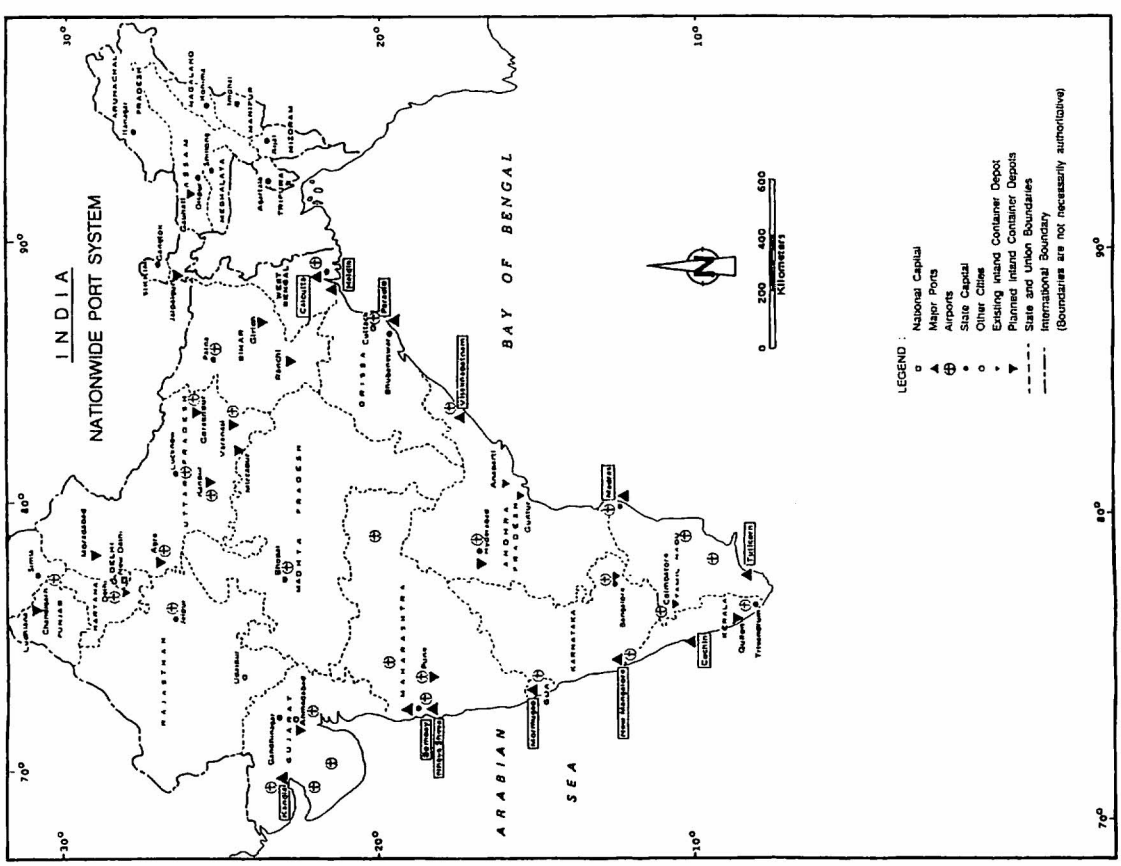


Fig. 9 Port System in India

give substantial advantages to Mongla Port over Chittagon and Calcutta Ports because of the shortened transport distance and time to / from Nepal. However, to obtain increased share of Nepalese cargo, it would be necessary for Mongla Port to compete with Calcutta Port, which has several other advantages compared with Mongla Port, such as better port facilities, special treatment for Nepalese cargo, and other port services.

(2) Chittagong Port

Chittagong Port is one of the two major ports in Bangladesh, with Mongla Port being ranked as the second. The port is located approximately 300 km to the east of Mongla Port. This port is also a quasi river port, on the west bank of the Kharnaphuri River 19 km upstream from the river estuary. It handles approximately 11 million tons of cargo and 330 thousand TEUs of container cargo annually. Handling 4 times as much the total cargo and ten times as much container cargo as Mongla Port, Chittagong Port plays a leading role in international trades in Bangladesh. It can accommodate larger vessels than Mongla Port. However, the distance between Chittagong Port and Nepal is substantially longer compared with Mongla Port. It handled 27 thousand tons of the Nepalese cargo in '96 / '97 and '97 / '98 consecutively.

(3) Calcutta and Haldia Ports

Calcutta and Haldia Ports are located approximately 150 km west of Mongla Port. Both Culcatta and Haldia Ports are jointly managed by Calcutta Port Trust (CPT), with Haldia Port having been developed as a kind of a supplementary port to Calcutta Port. Because of this background, both ports are sometimes called Calcutta Port as a whole and jointly counted as one of the major 11 ports in India. See Fig. 9. Both ports have their own dock systems, each of which comprises more than 10 berths, constituting substantially larger port complex than either Mongla Port or Chittagong Port.

Located approximately 200 km and 100 km upstream of the Hooghly River, respectively, both Calcutta and Haldia Ports are subject to the siltation problems in approach channels. They maintain navigable draft of 7.5 m to Calcutta Port and 8.0 m to Haldia Port. Since both ports have dock-systems, no significant problems have arisen in terms of vessel berthing and cargo handling. They jointly handle more than 30 million tons of cargo and nearly 20 thousand TEUs of container cargo.

Right now Calcutta Port is provided with dedicated facilities for Nepal which handled about 85 % of Nepalese cargo (408 thousand tons) in '97 / '98.

5. Transit Cargo for Nepal

5.1 Current Status

Nepal has cross border trades with adjacent countries, India and China, and with Bangladesh and Bhutan crossing the Indian territory. International trades, either imports or exports, with countries other than these neighbors, are necessarily conducted through seaports in the Region, among which Calcutta Port plays most significant role. As mentioned earlier, Calcutta port, including its sub-port, Haldia Port, provides dedicated port facilities for handling Nepalese cargo. The total throughput of the cargo handled at Calcutta Port has been in the range of 300 to 500 thousand tons in recent several years. Other Indian ports reportedly handled some Nepalese cargo, though the volume they handled seems to be much less than that of Calcutta Port. In addition both Chittagon and Mongla Ports also handle Nepalese cargo to some extent, though much less than that handled at Calcutta Port.

The Nepalese cargo through these three regional ports has steadily increased in these years, with an average annual growth rate of 6.7 %. Although imports represent 78 % of the total throughput in '97 / '98, the export volume has shown a significant increase. It is to be noted that though the Bangladesh ports did not handle significant volume of transit cargo for Nepal compared with Calcutta Port in these years, they have good potentials for accommodating Nepalese cargo as observed in '96 / '97 and '97 / '98. All of these cargoes are transported through either the Indian territory or the Bangladesh and Indian territories as transit cargoes to reach the Nepalese border. The same can be said to the transit cargo for Bhutan, though the total volume of cargo is significantly less than the Nepalese cargo. And, therefore, in this paper the case of transit cargo for Bhutan is not discussed while the fact that Bhutan has to rely entirely on the transit system through Indian territory for their international trades presents more acute problems in the international relations with India.

Because the Nepalese cargoes are handled at certain Indian ports other than these three regional ports though not so significant, it is difficult to precisely determine the volume of Nepalese transit cargo in the absence of reliable statistical data and information. In the 1980s, Calcutta Port reportedly handled 570 thousand tons of cargo annually. Therefore it seems reasonable to assume the annual total

of Nepalese transit cargo will be in the range of 500 to 600 thousand tons for this study purpose.

Based on the current traffic levels of Nepalese cargo at the three regional ports and assuming annual growth rate of 4 % of Nepalese economy, as estimated by the Asian Development Bank, which is slightly lower than the growth rate of Bangladesh, the total volume of Nepalese transit cargo to be handled at the three regional ports is anticipated at the level as shown in Table 2.

Table 2 Nepalese Cargo at Three Regional Ports (Figures in thousand metric tons)

Year	Import					Total Export	Grand Total
	General Goods	Fertilizer	Edible Oil	Others	Total		
Forecast 2015	1,179	179	219	30	1,606	388	1,994
Actuals '97 / '98	201	119	55	12	387	89	476

5.2 Impacts of Bridge Construction in Bangladesh

As mentioned earlier, construction of both Paksey and Rupsa Bridges is at the advanced stages of contract negotiations at this moment and therefore these bridges are expected to be opened for highway traffic in a few years' time. This will fill up the missing links in the North-West transport corridor of Bangladesh connecting Nepal with Mongla Port at the shortest route, most likely enhancing the role of Mongla Port as the gateway for Nepalese cargo. Such improvement of transport infrastructure will certainly affect favorably the course of development of the Region in the near future. The impacts will be for the entire region but more directly for Nepal, Bhutan and Bangladesh, provided the four countries in the Region will cooperate in harvesting the benefits of afore mentioned development projects.

5.3 Development Scenario for Nepalese Transit Cargo

In order to secure the benefits of bridge construction projects in Bangladesh, the performance of Mongla Port needs to be substantially improved. Without improved performance of the port, the most important benefits of the bridge construction projects for the Nepalese transit cargo, the shortening of hauling distance, will be unlikely realized.

With a view to assessing the development scenario for Nepalese transit cargoes, certain factors which would likely affect were reviewed and summarized below ;

(1) Calcutta Port has currently advantages of transporting substantial portions of the Nepalese cargo with its well developed port facilities and related land transport infrastructures. In addition the port offers special operational and financial treatments for the Nepalese cargo. These advantages are considered to persist in the near future as well.

(2) All the Nepalese transit cargo through the Bangladesh ports must eventually traverse the Indian territory, since Bangladesh does not have a direct border connection with Nepal and Bhutan as well. This will cause additional costs and transport time, even after cross border arrangements having been established with good will among the parties concerned.

(3) Shipping companies, which transport general cargoes in a form of container, tend to select the key port connected with many routes for their delivery and collection of containers. In the light of this worldwide trends of container services, Calcutta Port is currently best ranked among the three ports in the Region.

Based on the above review, three scenarios were drawn up for further examination of the role of Mongla Port for handling potential transit cargo for Nepal.

Case 1 : The present share of Mongla Port for the Nepalese transit cargo will be maintained ; only one third of fertilizer.

Case 2 : The share of bulk cargo handling will increase and a small portion of the general cargo will also be handled ; 50 % of fertilizer and 20 % of general cargo.

Case 3 : The share of bulk cargo will increase and further increased volume of general cargo will also be handled ; 50 % of fertilizer and 40 % of general cargo.

The results of the analysis are shown in Table 3.

Table 3 Nepalese Cargo at Mongla Port in 2015 (Figures in thousand metric tons)

Scenario	Import					Total Export	Grand Total
	General Goods	Fertilizer	Edible Oil	Others	Total		
Case 1	0	60	0	0	60	0	60
Case 2	200	90	0	10	300	100	400
Case 3	400	90	0	10	500	150	650

Case 1 seems to underestimate the potential role of Mongla Port taking into account the improvement of land transport infrastructure such as Paksey and Rupsa Bridges. Case 3 seems too much optimistic in favor of Mongla Port, considering the worldwide trend of inter-port competition. In conclusion, Case 2 is thought to be the most probable case among the three scenarios examined, where Mongla Port will handle 400 thousand tons out of the total 2 million tons of the Nepalese transit cargo, or 20 % of the total as shown in Table 3.

5.4 Action Plans for Mongla Port

In earlier sections, the possibility of substantial increase of transit cargo for Nepal through Mongla Port was examined, provided that the North-West transport corridor will be completed by construction of Paksey and Rupsa Bridges, thereby connecting Mongla Port with Nepal at the shortest hauling distance. It is expected that the Nepalese transit cargo through Mongla Port will amount to 400 thousand tons, ten times of the current level of traffic, or 20 % of the total Nepalese cargo to be imported and exported through the three regional gateway ports.

However, it will not be easy for the port to meet the expectation without further efforts by the port authority. In general, even a port with excellent infrastructures provision, including efficient land transport systems in the hinterland, it does not necessarily guarantee the achievement of the targeted level of traffic. Under the worldwide trends of severe market competition, the port needs to attract cargoes by providing the shippers with good port services, efficient port operations, security of cargo, navigation safety, low tariffs and others. To catch up with Calcutta Port foregoing in terms of port services and special treatments for the Nepalese transit cargo, Mongla Port has to establish action plans for necessary measures to be undertaken for better performance ; improvement of port services as mentioned above and measures for rehabilitation / construction of a new container terminal. Strengthening and streamlining of institutional arrangements are also needed. Accountability for financial management needs to be established for better services, along with some other measures.

Once such action plans are implemented effectively, efficiency of port operations will be improved and financial soundness will be substantially enhanced, thus enabling cost reduction of port services, yielding economic benefits for the port hinterland in the Region. In summary, it may be said that the further development of Mongla Port, upgrading and improvement of port services, in association with the

construction of Paksey and Rupsa Bridges, are expected to yield economic and financial benefits to not only Bangladesh but also landlocked countries in the Region.

6. Conclusive Remarks

While construction projects of Paksey and Rupsa Bridges were justified in the domestic context of Bangladesh economy, it was felt that the impacts of these projects should be assessed from the view points of the regional development in the Indian subcontinent in the light of likely favorable impacts on the economies of the regional countries concerned, India, Bangladesh, Nepal and Bhutan. In the absence of a reliable tool for evaluation of integrated development projects, the following evaluation was attempted on the impacts of the North-West transport corridor when completed. It was made in terms of development scenario for Nepalese transit cargoes through the three regional ports, Calcutta, Chittagon and Mongla Ports. The results of the examination are summarizes as below ;

(1) Once major transport infrastructures pertaining to the regional context such as Paksey and Rupsa Bridges would have been substantially completed, long-haul cross-border freight traffic such as Nepalese transit cargo would become a reality. Nepalese transit cargoes are likely to enjoy benefits from some transport cost savings in the use of Mongla Port of Bangladesh, while the role of Calcutta Port would remain unchanged. It would be desirable for Nepal to have alternative gateway ports and land transportation routes in the preparation for the events of unforeseen congestion or disaster in Calcutta Port. Otherwise, under such circumstances as now relying on the sole use of Calcutta Port, Nepalese economy would be entirely controlled under the discreet wills of India which hold currently hegemony over the Indian subcontinent.

(2) After completion of Paksey and Rupsa Bridges on the North-West strategic transport corridor in Bangladesh, the shortest route option will be realized between Nepal and Mongla Port. It would yield impetus of generating significant benefits from land transport cost savings and associated impacts on the regional communities. However, if the benefits would be realized or not will entirely depend on the appropriate cross-border arrangements, bilateral/trilateral agreements between Bangladesh and its neighbors with a view to avoiding costly and time-consuming unloading/reloading at the

border for the Nepalese transit cargo.

(3) Such bilateral/trilateral agreements with Bangladesh will spur Mongla Port to participate in inter-port competition, and it will result in yielding benefits from increased trade opportunities between Bangladesh and Nepal.

(4) Resulting increased revenues may accrue to Mongla Port and possibly Chittagong Port, and substantial Nepalese transit cargo would justify investment in the rehabilitation of container berths and facilities at Mongla Port in the process of sustainable development.

(5) The integration of regional development potentials in the Indian subcontinent will contribute to the stability, security and prosperity of the nations and regional communities concerned.

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運輸交通基盤整備における地域開発的視点：インド亜大陸東部地域の事例研究

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バングラデシュにおけるパクシー橋やルプシャ橋の建設、モングラ港改修と言った開発プロジェクトは、同国北西部における戦略的輸送回廊を形成するもので、同国の最優先課題として推進されている。

一方、これらのプロジェクトは地域社会に密着した運輸交通サービスを担うが、同時に輸送回廊に繋がるインド東部、バングラデシュ、ネパール、ブータンと言った広範な地域にも多大な便益をもたらす可能性を秘めている。本稿は国際的な広がりを持つ地域における運輸交通基盤の整備計画手法に関して地域開発的視点から考察を試みたものである。

ガンジス河を渡るパクシー橋及びルプシャ川に架かるルプシャ橋は、バングラデシュ北西部における戦略輸送回廊の一部を形成し、完成の暁にはモングラ港とネパールを結ぶ最短陸上輸送路線を実現する。もし、ネパール着発の国際通過貨物に関して、国境において多大の費用と時間を要する「貨物積み替えの廃止」と「通関手続きの簡素化」に係る国際的合意（Protocol）がバングラデシュ、インド、ネパールの三国間で成立すれば、モングラ港はこの地域における国際港としての優位性を確保し、競争力を増大する事になろう。その結果として、ネパール或いはその周辺地域との貿易拡大による便益は関係諸国を裨益する事になる。程度の差はあるが、ブータンとの間にも同様の事が期待されている。

国際的な広がりを持つ地域における運輸交通基盤の整備は、周辺諸国の地域開発ポテンシャルを統合し、経済活動を活性化する潜在的な機能を持つだけでなく、国境を跨ぐ地域の経済社会活動の相互依存を促し、ひいては地域の安定と安全保障に寄与する側面を持つ。

尚、本研究は、東日本鉄道文化財団の平成12年度研究助成を受けて行ったもので、東日本鉄道文化財団に対し深甚の謝意を表する。

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